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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,656	11/20/2006	Tomoyuki Shinoda	0599-0214PUS1	5671
2292 7590 07/22/2010 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747				
EXAMINER				
PATEL, RONAK C				
ART UNIT		PAPER NUMBER		
1787				
NOTIFICATION DATE		DELIVERY MODE		
07/22/2010		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

### Office Action Summary

**Application No.**

10/573,656

**Applicant(s)**

SHINODA ET AL.

**Examiner**

RONAK PATEL

**Art Unit**

1787

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04/26/2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12-16 and 32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-16 and 32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Interval Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 14 and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claims 14 and 15, while there appears to be support for specific types of base material as set forth in paragraph 122 of corresponding PGPub i.e. reinforcing fiber base material, there does not appear to be support to broadly recite "prepeg base material". Thus claims 14 and 15 lack written description requirement.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Claim 14 recites the limitation "the prepeg base material" in line 2. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 12, 13, 16 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugimori et al. (US 6670006) in view of Kumagai et al. (US 2003/0088108).

8. Regarding claims 12, 13, 16 and 32 Sugimori discloses an epoxy resin composition for FRP and a prepreg that is an intermediate material made up of an epoxy resin composition combined with reinforcing fibers (abstract). Epoxy resins after curing are excellent in mechanical, electrical and adhesive properties and widely used in the field of electronic materials, coating materials (col. 1, lines 2—24), which makes it an adhesive composition. The epoxy resin composition comprises epoxy resins i.e. thermosetting resin, and a curing agent (abstract) wherein the curing agent of the epoxy resin composition can be include imidazole compounds etc (col. 5, lines 24-29). Sugimori discloses a subject matter prepreg comprising a sheet of reinforcing fibers impregnated with epoxy resin composition (col. 2, lines 46-50). Sugimori also discloses the reinforcing fibers is made of carbon fibers, glass fibers, aramid fibers, boron fibers, steel fibers singly or in combination wherein carbon fibers are preferred since the

mechanical properties after molding are good (col. 7, lines 18-23). However, Sugimori fails to disclose that the adhesive composition comprises imidazole silane compound.

9. Whereas, Kumagai discloses an imidazole/organic monocarboxylic acid salt is prepared by reacting an imidazole compound represented by general formula (I) with a silane compound having a glycidoxy group represented by formula (2) reacts to form an imidazole silane compound such as formula (II) of the claim 32 of the present invention. (para 0019). Kumagai also discloses that the imidazole/organic reactive product is added to a resin such as epoxy resin to promote the adhesive strength and the mechanical strength of the resin are improved (para 0007). The motivation for including an imidazole silane compound such as formula II of claim 32 along with the epoxy resin is to improve the adhesive and mechanical strength (para 0007).

10. In light of the motivation of including an imidazole silane compound as taught by Kumagai as described above, it therefore would have been obvious to one of ordinary skill in the art at the time of invention to include an imidazole silane compound of Kumagai in the adhesive composition of Sugimori motivated by the desire to improve the adhesive and mechanical strength of the composition.

11. Claims 12-16 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over unpatentable over Friedrich et al. (US 5340946) in view of Sugimori et al. (US 6670006) and Kumagai et al. (US 2003/0088108).

12. Regarding claim 12-16, Friedrich discloses an adhesive composition comprising at least one film forming polymeric resin such as epoxies i.e. thermosetting resin and a curing agent (abstract). Friedrich discloses in example 5 in column 18, where the

adhesive layer is laminated on the surface of a substrate which comprises a piece of fiberglass reinforced epoxy laminate and a piece of epoxy prepreg was placed on the fiberglass reinforced epoxy laminate and epoxy resin of the prepreg was cured. The surface of the cured prepreg was then brushed in order to roughen the surface prior to the application of the adhesive layer.

13. However, Friedrich fails to disclose that the reinforcing fibers are impregnated with the adhesive resin composition and wherein the reinforcing fibers are carbon fibers and fails to disclose that the adhesive resin composition comprises an imidazole compound. However, Sugimori discloses an epoxy resin composition for FRP, a prepreg that is an intermediate material made up of an epoxy resin composition combined with reinforcing fibers (abstract). The epoxy resin composition comprises epoxy resins and a curing agent (abstract) wherein the curing agent of the epoxy resin composition can be such as imidazole compounds etc (col. 5, lines 24-29). Epoxy resins after curing are excellent in mechanical, electrical and adhesive properties and widely used in the field of electronic materials, coating materials (col. 1, lines 2—24), which makes it an adhesive composition. Sugimori discloses a subject matter prepreg comprising a sheet of reinforcing fibers impregnated with epoxy resin composition (col. 2, lines 46-50). Sugimori also discloses the reinforcing fibers is made of carbon fibers, glass fibers, aramid fibers, singly or in combination, carbon fibers are preferred since the mechanical properties after molding are good (col. 7, lines 18-23). The motivation for impregnating reinforcing fibers with the adhesive composition and using the curing agent as imidazole compound is to form a prepreg that has suitable tack and flexibility and is good in

balance between stability with time and curability and also the crushing and the flexural strength in a direction of 90 degree are improved (col. 7, lines 50-58) and the motivation for using the carbon fibers in the prepeg is to have good mechanical properties after molding (col. 7, lines 18-23).

14. Whereas, Kumagai discloses an imidazole/organic monocarboxylic acid salt is prepared by reacting an imidazole compound represented by general formula (I) with a silane compound having a glycidoxo group represented by formula (2) reacts to form an imidazole silane compound such as formula (II) of the claim 32 of the present invention. (para 0019). Kumagai also discloses that the imidazole/organic reactive product is added to a resin such as epoxy resin to promote the adhesive strength and the mechanical strength of the resin are improved (para 0007). The motivation for including an imidazole silane compound such as formula II of claim 32 along with the epoxy resin is to improve the adhesive and mechanical strength (para 0007).

15. In light of the motivation of impregnating reinforcing fibers with the adhesive composition and using the curing agent as imidazole compound and using the carbon fibers in the prepeg and including an imidazole compound as taught by Sugimori and Kumagai as described above, it therefore would have been obvious to one of ordinary skill in the art at the time of invention to use adhesive composition with epoxy and imidazole compound wherein carbon fibers are impregnate the reinforcing fibers of Friedrich with the reinforcing carbon fibers with an imidazole with the adhesive composition as taught by Sugimori to form a prepeg that has suitable tack and flexibility and is good in balance between stability with time and curability and also the crushing

and the flexural strength in a direction of 90 degree are improved to have good mechanical properties after molding (col. 7, lines 18-23) and it therefore would have been obvious to one of ordinary skill in the art at the time of invention to include an imidazole silane compound of Kumagai in the adhesive composition of Friedrich motivated by the desire to improve the adhesive and mechanical strength of the composition.

### ***Conclusion***

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

17. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to RONAK PATEL whose telephone number is (571)270-



1142. The examiner can normally be reached on Monday to Thursday 8 AM EST to 6PM EST.

19. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

20. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. P./  
Examiner, Art Unit 1787  
07/15/2010

/Callie E. Shosho/  
Supervisory Patent Examiner, Art Unit 1787